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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/600,841 | 06/23/2003 | Toru Aoki | 116150 | 6250 |

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| EXAMINER | |
|---|---|
| KOVALICK, VINCENT E | |
| **ART UNIT** | **PAPER NUMBER** |
| 2677 | |

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/600,841 | AOKI ET AL. | |
| | Examiner | Art Unit | |
| | Vincent E. Kovalick | 2677 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,10,11 and 13-18* is/are rejected.

7)☒ Claim(s) *2,4-9 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 6/23/03; 7/28/04, 11/8/04, 6/2/05, 8-15-05
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *See Continuation Sheet*.

Continuation of Attachment(s) 6). Other: IDS: 11/8/04; 6/2/05 and 8/15/05.

## DETAILED ACTION

1. This Office Action is in response to Applicant's Patent Application, Serial No. 10/600,841, with a file date of June 23, 2003.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 10-11, 13-15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murade (Pub. No US 2001/0050799); taken with Sano et al. (Pub. No. US 2002/0047552).

Relative to claims 1, 11, 14 and 18, Murade **teaches** an electro-optical device and electro-optical apparatus (pg. 1, paras. 0008-0039); Murade further **teaches** an electro-optical device comprising a substrate; a plurality of pixel electrodes arranged in a matrix above the substrate; thin-film transistors provided above the substrate to control switching of the pixel electrodes; scan lines provided above the substrate to supply scan signals to put the thin-film transistors into an ON state or an OFF state to the gates of the thin-film transistors; data lines provided above the substrate to supply image signals to the pixel electrodes through sources and drains of the thin-film transistors when the thin-film transistors are put into the ON state (pg. 1, pare. 0004; pg. 9, para. 0117 and Fig. 3); it being understood that the absence of a scanning signal would

put/keep the thin-film transistor in a OFF state.

Murade **does not teach** a scan-signal supply circuit that line-sequentially supplies the scan signals to the scan lines and holds the potential of the scan signals, in the middle of changing the potential of the scan signals from a high potential that puts the thin-film transistors into the ON state to a low potential that puts the thin-film transistors into the OFF state and in the middle of changing the potential of the scan signals from the low potential to the high potential, to an intermediate potential between the high potential and the low potential for a predetermined period.

Sano et al. **teaches** a display device driving circuit (pg. 1, paras. 0009-0026); Sano further **teaches** a scan-signal supply circuit that line-sequentially supplies the scan signals to the scan lines and holds the potential of the scan signals, in the middle of changing the potential of the scan signals from a high potential that puts the thin-film transistors into the ON state to a low potential that puts the thin-film transistors into the OFF state and in the middle of changing the potential of the scan signals from the low potential to the high potential, to an intermediate potential between the high potential and the low potential for a predetermined period (pg. 9, paras. 0131-0132 and Figs. 22 and 23).

It would have been obvious to a person of ordinary skill in the art at the time of the inventions to provide to the devices as taught by Murade the feature as taught by Sano et al. in order to provide the means to hold the transistor gate voltage at an intermediate potential for a specified period of time.

Regarding claims 3 and 15, Sano et al. **teaches** the said electro-optical device wherein the intermediate potential being set to a potential that puts the thin-film transistors into a incomplete ON state ( pg. 9, para. 0132 and Fig. 23).

Relative to claim 10, Murade **teaches** the said electro-optical device further comprising: an opposing substrate, which opposes the substrate; and an electro-optic material layer that is sandwiched between the substrate and the opposing substrate (pg. 1, para. 0004)

Regarding claim 13, Murade **teaches** the said drive device for an electro-optical device further comprising an image-signal supply circuit that supplies the image signals to the data lines (pg. 5, para 0067 and Fig. 2, item 140).

4. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murade taken with Sano et al. as applied to claim 14 in item 3 hereinabove, and further in view of Taniguchi et al. (USP 6,047,717).

Regarding claims 16-17, Murade taken with Sano et al. **does not teach** the drive method for an electro-optical device including settings of intermediate potentials of the scan signals for scan lines that are adjacent to each other are different from each other; or, settings of high potentials of the scan signals for scan lines that are adjacent to each other are different from each other.

Taniguchi et al. **teaches** a Liquid Crystal Apparatus (col. 2, lines 11-67 and col. 3, lines 1-15); Taniguchi et al. further **teaches** the drive method for an electro-optical device including a plurality of scan lines that are line-sequentially driven, and settings of intermediate potentials of the scan signals for scan lines that are adjacent to each other are different from each other; or, settings of high potentials of the scan signals for scan lines that are adjacent to each other are different from each other (col. 8, lines 16-30 and Fig. 16).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Murade taken with Sano et al. the feature wherein the intermediate and high potentials as taught by Sano would be reversed in polarity on adjacent scanning lines as taught by Taniguchi et al. in order to reduce image flicker and optimize the quality of displayed images.

### *Allowable Subject Matter*

5. Claims 2, 4-9 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regading claim 2, the major difference between the teachings of the prior art of record (Pub. No. US 2001/0050799, Murade; Pub. No. US 2002/0047552 and USP 6,046,717, Taniguchi et al.) and that of the instant invention is that said prior art of record **does not teach** an electro-optical device wherein the scan-signal supply circuit supplying the scan signals so that, a period in which, of two scan signals supplied to the adjacent scan lines, one scan signal that precedes is changed from the intermediate potential to the low potential, and a period in which the other scan signal that follows is changed from the low potential to the intermediate potential overlap each other.

Relative to claim 4, the major difference between th teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** an electro-optical device where in the middle of changing the potential of the scan signals from the high potential to the low potential, the scan-signal supply circuit holding the potential of the scan signals to a

plurality of potentials for respective predetermined periods, the plurality of potentials being different from each other and including the intermediate potential; and , in the middle of changing the potential of the scan lines from the low potential to the high potential, the scan-signal supply circuit holding the potential of the scan signals to a plurality of potentials for respective predetermined periods the plurality of potentials being different from each other and including the intermediate potential.

Regarding to claims 5 and 12, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** an electro-optical device wherein the scan-signal supply circuit includes a shift-register circuit that sequentially outputs a transfer signal to the scan lines; an output circuit that line-sequentially outputs the scan signals to the scan lines in response to input of the transfer signals; and a power-supply changing circuit that changes an external power supply to define the high potential at output sides of the output circuit to two values.

## *Conclusion*

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

| | | |
|---|---|---|
| U. S. Patent No. | 6,313,818 | Kondo et al. |
| U. S. Patent No. | 6,300,930 | Mori |
| U. S. Patent No. | 5,699,078 | Yamazaki et al. |
| U. S. Patent No. | 5,657,041 | Choi |
| U. S. Patent No. | 5,587,722 | Suzuki et al. |

***To Respond***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent E. Kovalick whose telephone number is 571-272-7669. The examiner can normally be reached on Monday-Thursday 7:30- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-2782-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vincent E. Kovalick

AMR A. AWAD
PRIMARY EXAMINER

October 12, 2005